Chapter # 28

EMPLOYER, INDUSTRY AND POLICYMAKER VIEWS ON DOCTORATE EDUCATION

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ABSTRACT
As society undergoes green and digital transitions, various policymakers such as the European Commission expect universities to contribute to innovation and progress. As education's highest achieving graduates, the doctorate holder may be key in this era of innovation and problem-solving. As academic career prospects dwindle, and PhD graduates increasingly enter industry, academic research has highlighted that traditional PhD programmes may not provide the required skills and knowledge for the workforce today. To learn how best to address such issues, we consulted thirteen EU policy documents and industry-led reports; and interviewed thirteen employers to add their voice to the discussion. Findings align with previous reports of a lack of transferable skills, but also introduce new concerns such as the desire for adaptability, experience, and redefining skills with regards to self-presentation. We discuss interdisciplinarity and intersectorality as potential solutions to addressing these needs.

Keywords: doctoral education, practice perspective, programme design, skill acquisition, PhD programmes.

1. INTRODUCTION

As time passes and we become more reliant on technology, policymakers highlight the importance of universities in preparing a highly skilled workforce equipped to deal with the modern challenges of a more technologically advanced and sustainable future, otherwise coined as the Transformative Age (Directorate General for Education, Youth, Sport, and Culture [DG EAC], 2020; Lutin, 2020). Universities are now considered a major player in this societal development (Cardoso, Tavares, & Sin, 2019). However, a distinct lack of transferable skills and practical experience has led many employers to dismiss the potential of universities' most educated prospective workforce: the doctoral graduate (Cui & Harshman, 2020).

The introduction of interdisciplinary and intersectoral doctoral programmes aims to tackle these past criticisms of overspecialization and isolation by placing doctoral graduates in new environments where they must learn to adapt and work in complex teams thus better preparing them for the future work environment (Cardoso et al., 2019; Celis & Acosta, 2016; Cui & Harshman, 2020; Germain-Alamartine & Moghadam-Saman, 2020; Patricio & Santos, 2019) be it in industry or indeed in academia.

This chapter begins with an insight into the background and context of the study, followed by a discussion of our methods, our findings across three main themes and their sub-themes, and concludes with a discussion section and implications for future research.

2. BACKGROUND

Today, unique skills and knowledge are key drivers in innovation, as opposed to their material counterparts of the past such as land and labour capital (Celis & Acosta, 2016). Policymakers such as the European Union acknowledge this shift, and thus have set out strategies for skills and knowledge attainment towards an overall increase competitiveness in the global market (Haapakorpi, 2017). The Lisbon Strategy, for example, advocates investing into higher education to create "the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion" (European Parliament, 2009, p. 1). This push to develop skills and knowledge has created a knock-on effect for employers, whose demands for education have increased. The result is a push towards the highest levels of education one can complete (Santos, Veloso, & Urze, 2020). The doctorate is the ultimate form of educational attainment and as such, carries a highly respected reputation for knowledge and problem-solving. Traditionally, earning a doctorate came with an intense yet solitary research workload. Recent years, however, have seen the growth of alternative, more socialized, paths to achieving a doctorate utilizing interdisciplinary or intersectoral elements (Briehl, et al., 2016; Dasgupta, Symes, & Hyman, 2015; Donina, Seeber, & Paleari, 2017; Golembiewskih, Holmes, Jackson, Brown-Podgorski, & Menachemi, 2018).

As more people pursue a doctorate, competition increases and availability of academic posts decreases. Many doctorate holders therefore find themselves struggling to secure permanent academic employment and/or funding after their studies (Alfano, Gaeta, & Pinto, 2021; Gallemí-Pérez & Chávez-Medina, 2021). Past critiques of overspecialization and a lack of real-world applicability of their work have forced universities and doctorate candidates to re-evaluate their preparedness for careers and goals outside of academia (Caliskan & Holley, 2017; Cui & Harshman, 2020). Studies have also shown that overspecialized doctorate holders report decreased job satisfaction and earnings, or are underpaid for their extensive qualifications in comparison to non-doctoral professional peers (Germain-Alamartine & Moghadam-Saman, 2020, Haapakorpi, 2017). Unless they hold a record of industry-specific competence, doctorate holders are frequently disregarded by employers outside of the academy (Haapakorpi, 2017).

This presents a paradox in which those who are considered among the most knowledgeable and talented problem-solvers, are also considered unhelpful in solving many of the global issues we face and unable to make contributions to innovation and progress in industries. As Neumann and Tan put it, "[a]cknowledgment of the important role of the training of doctoral graduates also recognizes that a knowledge economy requires research careers beyond the traditional academic career" (Neumann & Tan, 2011, p. 603).

In this chapter we set out to help address some of these issues raised, by including practitioner voices in the discussion, most notably policymakers and employers. We do so through review of thirteen policy documents and industry reports, alongside thirteen interviews with employers. In doing so, we aim to bring the academic and practice perspectives together to identify shared targets in improving employability within doctorate education. Additionally, we seek to highlight key areas for improvement that are less discussed in the purely academic conversation.

Therefore, our research questions are as follows.

1. What skills do policy-makers and industry-based employers seek in graduates today, particularly at the doctorate level?
2. What steps can we take to build these skills in doctoral candidates?

3. METHOD

Our multimethod study includes a) a systematic review of thirteen policy and industry reports relating to doctoral education; and b) thirteen in-depth semi-structured interviews with PhD employers or experts in PhD recruitment/placement. The systematic review process included three sources of non-academic reports and policy documents:

1. Directorate General for Education, Youth, Sport and Culture strategy and plans.
2. EU level policy reports citing doctoral education.
3. Big 4 (KPMG. PwC, EY, Deloitte) consulting reports citing doctoral education.

The first search was conducted within the Directorate General for Education, Youth, Sport and Culture website while the second and third searches were conducted using Google's advanced search function. Filters applied were as follows: pdf format documents, English language, and that the website had been updated in the last year. These filters ensured a level of formality, the author's ability to analyse the information, and the currency of the documentation respectively. Each document was then reviewed using the qualitative data analysis software NVivo.

Interviewees for the semi-structured interviews were identified in the first instance through an international doctoral education consortium, spanning multiple countries including Ireland, Spain, Greece, and Finland. Further interviewees were then added through a snowball sampling approach. Having first obtained informed consent, interviews were conducted virtually using Microsoft Teams. They lasted an average of 34 minutes and ranged between 18 to 52 minutes. Interviews took a semi-structured approach and as themes began to emerge, questions evolved through an iterative process. All interviews were recorded, transcribed verbatim and analysed inductively using NVivo. This involved a three-step process of coding, beginning with open coding before progressing to selective coding and finally, theoretical coding (Glaser & Strauss, 2017). An overview of the interviewee locations, occupations, and the length of each interview is provided in Table 1 below.

Table 1.
Overview of interviews.

Interview No.	Country	Occupation	Duration
Interviewee A	Spain	Co-founder, medical informatics company	40 mins
Interviewee B	Spain	Medical Director, pharmaceutical company	52 mins
Interviewee C	Finland	Market Research Analyst, health research clinic	27 mins
Interviewee D	Ireland	Head of Innovation, technology MNC	30 mins
Interviewee E	Portugal	HR Director, private clinic and hospital group	43 mins
Interviewee F	Ireland	Co-founder, sports wearables company	32 mins
Interviewee G	Ireland	Supervisor, hospital-based research institute	39 mins
Interviewee H	Ireland	Founder, social media marketing company	34 mins
Interviewee I	Ireland	Principal Investigator, national software research center	45 mins
Interviewee J	Ireland	Director, national data analytics research center	30 mins
Interviewee K	Spain	Head of Innovation, healthcare NGO	20 mins
Interviewee L	Ireland	Careers Guidance Counsellor, university	34 mins
Interviewee M	Ireland	Data Analyst, national health organization	18 mins

4. CHARACTERISTICS OF THE REPORTS REVIEWED

Of our thirteen documents, eight of those (61.5%) were published by governmental bodies and policymakers, all of which were based in Europe. The remaining five documents were all consultant reports, with headquarters in the Netherlands (40%), United Kingdom (40%), and Switzerland (20%). Only one document was published in 2018 (approximately 8%), with one published in 2019 (8%), eight published in 2020 (61.5%) and two published in 2021 (approximately 15.3%).

It must be noted that of those published in 2020, all eight (100%) of those documents were published in the months following the outbreak of the COVID-19 pandemic. The months of publication for 2020 were as follows: one in May (12.5%), one in June (12.5%), three in September (27.5%), two in October (25%), one in November (12.5%) and one in December (12.5%). Interestingly, the only two documents to be published in 2020 (that were published by a consultant firm) were published in May and June – an entire season before the others.

Table 2.
Overview of policy and industry documents

Search	Documents Retrieved and Analysed
DG Education	1. European Commission, (2020), *Commission Work Programme 2021: A Union of Vitality In A World Of Fragility*, Brussels, 19.10.2020 Com (2020) 690 Final Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions. 2. *Strategic Plan 2020-2024* Directorate General for Education, Youth, Sport, and Culture Ref Ares (2020)4764872 – 11/09/2020
EU level policy	3. European Parliament, *The future of tertiary education in Europe*, Authors: Denise Chircop, Cemal Karakas, Monika Kiss and Marcin Szczepanski, with Lea Schomaker Members' Research Service PE 652.095 – September 2020 4. *Tracking the careers of doctorate holders*, EUA-CDE Thematic Peer Group Report, October 2020 5. EUA (European University Association), *Perspectives on the new European Research Area from the university sector*, December 2020 6. Mark Whittle, James Rampton, *Towards a 2030 Vision on the Future of Universities in Europe* Policy Report, Independent Expert Report, Centre for Strategy & Evaluation Services LLP (CSES) September – 2020 7. Yerun *Annual Report 2020* 8. Eurodoc, *Policy Input for European Higher Education Area: Focus on Doctoral Training and Doctoral Candidates*, Brussels, Nov 2020
Consultant reports	9. KPMG (2019) *Future-proofing the University* 10. KPMG (2020) *The future of higher education in a disruptive world* 11. Deloitte Insights, *Superlearning*, 29 June 2020 12. World Economic Forum (in collaboration with PwC) Upskilling for Shared Prosperity INSIGHT REPORT JANUARY 2021 13. EY (2018), Halloran & Friday, *Can the universities of today lead learning for tomorrow? The University of the Future*

5. FINDINGS

Findings highlight firstly, the changing world of employment and universities as society undergoes green and digital transitions; secondly, the skills required of employees; and thirdly, the steps taken by universities to address these needs in the form of interdisciplinarity and intersectorality in doctoral programmes.

5.1. Universities and Work in Changing Contexts

In the past, universities were viewed as central hubs for education. However, the role has now changed to include contribution to innovation and societal development (Cardoso et al., 2019). There are "growing expectations that universities will not only undertake their core pedagogical function and carry out research, but also engage in other activities, such as contributing to the development of culture, cooperating outside academia, citizen engagement in research and science carried out by universities through societal outreach, and the use of research to tackle societal challenges" (Whittle & Rampton, 2020, p. 15). The world of work has changed also, thanks to more efforts in sustaining our planet, and advances in technology that were further accelerated by the COVID-19 global pandemic and mainstreaming of remote working options (European Commission, 2020; Lutin, 2020).

5.1.1. Green and Digital Transitions

This changing role of universities is due to multiple factors, some of which include the green and digital transitions our society is going through (European University Association [EUA], 2020; DG EAC, 2020). Green and digital transitions refer to the growth of technology and steps towards sustainability.

These green and digital transitions are a priority for policymakers and industry, especially within the European Union as the EU strives to be a global leader in innovation and societal change (European Commission, 2020). As such, is it critical for universities to be aware of this when preparing graduates, including those at the doctorate level, for the changing nature of work. Deloitte explain that this change to the nature of work is due to "technology innovation, a growing demand for new competencies, changing employee expectations, shifting labour demographics and inclusion/diversity strategies, new workforce models, and the evolving business environment with all its regulatory changes" (Lutin, 2020, p. 1).

In terms of the digital transition in particular, it is important that we are "ensuring strong collaboration and smart specialization between universities, research centers and firms, and adequate availability of skills" (DG EAC, 2020, p. 9). To do so, DG EAC (2020) suggest four key criteria for successful digital transition:

1. New environments that are conducive to collaboration and innovation;
2. Stronger innovation capabilities across both academia and the research sector;
3. A new generation of entrepreneurial people; and
4. The creation and the development of innovative ventures.

As previously mentioned, the pandemic has further accelerated these transitions. Not only did we become more heavily reliant on technology, we also reassessed the way we live and the impact that we have on our environment. "Changes in climate, digital technologies and geopolitics were already profoundly affecting our society and driving our agenda. However, the pandemic has sharpened the need for Europe to lead the twin green and digital transitions and make its societies and economies more resilient. This creates an unparalleled opportunity to move out of the fragility of the crisis by creating a new vitality for our Union" (European Commission, 2020, p. 1-2).

5.2. Skills for The Workforce

With the changes in how we work, it is unsurprising that both the practitioner literature and the employer interviews revealed that employers seek skills in potential employees that may not be addressed in traditional PhD programmes. Transferable skills are among those most mentioned, though other factors such as experience and adaptability are also deemed desirable in working on the "fast and small projects" of industry (Interviewee C).

5.2.1. Transferable Skills

Another priority for practitioners is ensuring that the correct skills are developed within university programmes. The European Council of Doctoral Candidates and Junior Researchers, calls for quality standards that encourage transferable skills training in doctoral programmes (European Council of Doctoral Candidates and Junior Researchers [Eurodoc], 2020). The Council Conclusions also note the need to broaden researchers' skills and competences and propose an enhanced European Competence Framework for Research Careers (Eurodoc, 2020).

The topic of transferable skills is not new, particularly in doctoral education. Transferable skills, otherwise known as soft skills, are those that can be applied across disciplinary and professional boundaries (Haapakorpi, 2017). Some of the most commonly sought transferable skills include communication, teamwork, time management, organization and project management (Interviewee A, B, D, F & L). As put by Interviewee J, "there's a greater need for individuals that have a broad based set of skills that are connected and interrelated and can look at a problem from a number of different angles". Despite their applicability to a range of career paths and their attractiveness to future employers, traditional doctorate programmes do not typically invest in the development of these 'soft skills' (Cui & Harshman, 2020; Donina et al., 2017; Germain-Alamartine & Moghadam-Saman, 2020; Slota, McLaughlin, Bradford, Langley, & Vittone, 2018).

Employers explained that they were happy to train or provide financial supports for external training and technical development (dependent on budget constraints and size of organization). This stood in contrast to transferrable skills. Although these were valued by employers, employees were expected to develop such skills without employer support, as Interviewee E admitted their company's hesitancy around "personal development" in favour of "professional development". They stated plainly, "We are far away from doing a good job there" (Interviewee E). However, the most common apprehension surrounding the hiring of doctorate holders was their apparent lack of such skills. Interviewee G suggested that transferable skills were inherent already, and so employers should be expected to focus on developing 'hard skills' such as "knowing how to use microscope" or "comparing a drug response", with Interviewee C additionally naming AI, machine learning and software development as a few other examples. The soft skills were viewed as something only the individual themselves could truly develop, as Interviewee G encouraged doctoral candidates and employees to reflect on career goals and capabilities independently. They explained, "I think it's a mind shift" and referred to lifelong learning, which Interviewee I later described as a skill in itself.

5.2.2. Adaptability and Experience

Innovation and collaboration are also key according to employers. Interviewees mentioned that teamwork was important for the organization's success as it allowed them to stay one step ahead of their competitors. However, the traditional isolation of doctoral programmes led some employers to believe that doctoral graduates – despite their expert knowledge – were not valuable assets to the organization as they lacked adaptability to the

fast-paced environment in industry (Interviewees C and H). Knowledge was only one of the criteria considered in the hiring process. Experience in a professional setting was also highlighted as strengthening one's application; "I look for particular experiences, like if I see someone who has worked in retail trade… You can have all the theory in the world, but unless you can actually learn how to apply it in a scenario, you haven't learned anything" (Interviewee H). Both would make it easier for the candidate to fit into the organization on both a technical level and personal level, the latter taking priority in some cases. "I've been faced with a choice between two people at an interview scenario, and the one that the one that on paper looks best is not the one I choose, because I just don't think they fit…I can imagine them having pints in the pub with the rest of the team…going to somebody's wedding in the team in five years time. That's the person you want to have on your team" (Interviewee J).

Interviewee G mentioned that regular evaluation sessions would occur every two months, whereby employees had the opportunity to discuss their current performance and if they wished, could request to move to a different role or department they thought best suited their skills and interests. However, a lack of confidence often resulted in doctorate holders struggling to voice their opinions. This in turn meant that they often missed out on opportunities to be flexible in their work and explore multiple options to find what best suited their interests and skill set (Interviewee G).

5.2.3. Personality as a Skill?

Building on the topic of confidence, when asked about particular skills that employers may seek in potential employees, our interviewees not only mentioned transferable skills, but also began to list skills that we, the authors, had previously thought of as personality traits. Some of these examples included confidence and a positive attitude (Interviewees H and J), resilience (Interviewee A), and determination (Interviewee F). Interviewee I even suggested that learning in itself was a skill and that self-awareness of one's strengths, weaknesses, and opportunities to develop, was key to honing it. It is worth noting however, that resilience specifically was also described as a skill by the DG EAC (2020) though this was linked to the pressure placed by the COVID-19 pandemic.

Interviewees G and I noted that as people who frequently worked with doctorate students or holders, they wished more doctorate holders would see themselves as being on an equal footing with supervisors or employees and not be afraid to challenge or suggest their own ideas. Interviewee C noted that doctorate holders often possessed many of the skills sought by employees yet were not made aware of how such skills can be demonstrated to future employers. Their university did not focus on how such skills could be marketed to achieve careers outside of the academy. This was borne out by Interviewee C's own experience as a graduate seeking employment: a collaboration with an industry organization helped Interviewee C to realize their potential to employers and to develop a market mindset. They acknowledged that this was not the case for their doctorate peers, who had very little interaction outside of their home discipline or institution.

Stereotypes of doctorate holders painted a generalization of 'loner' personality types, with Interviewee E commenting that "you wouldn't have a PhD in a sales role" where they may be expected to deal with customers or work in teams. Interviewee H echoed this sentiment, as they explained that different roles required different personalities and viewed doctorate holders as "super specialists" that were unsuited to B2B (Business to Business) marketing or customer service roles unless they had shown previous retail experience. Interviewee E often placed doctorate holders in technical positions towards "the back" of the organization. Despite academics often collaborating with each other, industry practitioners

were not aware of such work and assumed that doctorate holders were not suited to working with others and did not think of them as team players. With teamwork consistently named as one of the most desirable soft skills by employers, this outdated stereotype is worrying but highlights that practitioners are not fully aware of the goals and procedures within academia particularly at the doctorate or post-doctorate level.

Interviewee E disagreed that personality is a key requirement in their employees, but noted that personal values were important. Being able to identify with the values and culture of the organization was key and supported Interviewee J's previous comments on seeking employees who fit personally with the organization.

5.3. Interdisciplinarity and Intersectorality

Two ways of introducing opportunities to build adaptability and provide professional experience to doctoral students are through interdisciplinarity and intersectorality in the design of the PhD programme. Interdisciplinarity - the act of working with and transferring knowledge from different disciplines to one's own – has become increasingly visible in doctoral education (Kemp & Nurius, 2015; Mountford et al., 2018, Mountford et al., 2020). Interdisciplinarity provides students with new perspectives and methods of working, which employers mentioned as one particular way of bringing much needed diversity to their organization (Interviewee I). Industry leaders also highlight the importance of interdisciplinarity, with statements that futureproofing will require "building mechanisms so that understanding of the world outside Universities is drawn in systematically and across the full range of academic disciplines." This will allow universities to "shape the work of businesses through their research and teaching innovations which capitalize on new technologies, processes and approaches" (Andrew & Bagshaw, 2019, p. 12).

Interviewee I reflected on their own academic and professional journey, as they praised the benefits of interdisciplinary elements in higher education, "Now computing is everywhere. So, we have to really know and understand more about the areas within which we're working. And obviously, we're never going to get everything. But the fact that we have been trained to work with one interdisciplinary group and to break out of our silos is really good". Interviewee H explained, "Some of the employees here wouldn't have a business background, but yet they have the right attitude. One of the top employees actually has a background in chemistry and yet, she has the ability to have a very deep understanding of the meaning of marketing".

Intersectorality, whereby universities will work in collaboration with industry, is also on industry and policymaker radars (DG EAC, 2020). EUA stresses that universities are well able to equip researchers with the necessary basic and advanced skills to meet current technological and societal challenges. At the same time, universities also engage in and co-implement numerous collaborations with partners outside of academia. Through collaborative doctoral education schemes, universities foster the involvement of public and private sector actors in doctoral training" (EUA, 2020, p. 13).

Chircop, Karakas, Kiss, and Szczepanski (2020) paint a picture of an ideal industry-academia interaction where "both the expectations of industry and those of academia are satisfied to a similar extent and an equal partnership develops" (p. 14). These collaborations are "strategic and long-term. They are built around a shared research vision and may continue for a decade or beyond, establishing deep professional ties, trust and shared benefits, which can bridge the important cultural difference between academia and industry. Ideally, they are led by individuals who understand both the academic and business world" (p. 14). This is not an unpopular vision, as "[s]ome 97 % of Europeans think that it is useful for students to work on innovative projects with researchers and companies from

different countries. EU graduates who underwent some work-based experiences during their studies also reported better prospects in a graduate tracking survey conducted by the European Commission" (Chircop et al., 2020, p. 16).

Whittle and Rampton (2020) identify a need to increase the intersectoral mobility of academics and researchers: "Whilst there remains a need for many academics to work in-depth within their own disciplines, two trends are increasing the need for inter-sectoral and inter-disciplinary mobility amongst researchers: first, the trend towards short-term funding for research positions at R2 and R3 levels in general; this is requiring researchers to change roles within academia or even into and out of other sectors; second, many of the key challenges facing society require solutions that draw on and combine expertise from different academic disciplines and with expertise from non-academic sectors. There is therefore a need to develop a mix of specialist and transversal competences, which typically requires a degree of inter-sectoral and inter-disciplinary mobility, although such mobility will take very different forms and vary across different disciplines" (p. 88-89).

Interviewee J revealed that intersectoral collaborations formed the basis of much of their hiring strategy, as they got to know and work with students over the course of their studies and research: "You know, I've had quite a lot of examples of people who have completed an undergraduate final year project with me. And then I kind of got to know them that way. And then they came to do a master's that turned into a PhD and then we'd recruit them as a postdoc". Not only did these intersectoral collaborations provide an opportunity to build their job mobility, but they also expanded the networks of PhD candidates which they later used as an asset in their job search. Interviewee F supported this idea, as they revealed they frequently hired those from their networks "because of the benefits that gave serenity of knowing the person or knowing, you know, the person that can vouch for them".

6. FUTURE RESEARCH DIRECTIONS

The changing nature of work has been accelerated by the Covid-19 pandemic, resulting in an even greater need now for technological capabilities and greener innovation. Previous academic literature reviews did not explicitly mention such digital or green transitions (Leniston & Mountford, 2021). This highlights another way in way academia and practice are disconnected – not just doctoral education in practice but also the way in which we study and learn about doctoral education itself.

Most notably though, academics' previous understanding of 'soft' or transferable skills were along the lines of teamwork, time management, organization and other task-related capabilities (Cui & Harshman, 2020; Germain-Alamartine & Moghadam-Saman, 2020; Kitchin, 2015; Patterson et al., 2019). The practice perspective extends the concept of 'hard' or technical skills versus soft skills, adding a third category of skills: those based on what might previously have been considered personality traits. This raises questions as to whether such skills are intrinsic or can be trained – and if so, how? This may imply that other disciplines, such as psychology, can further contribute to this understanding of the practice perspective and how best to implement measures into doctoral education programmes to meet industry demands.

This is crucial as employers explained that their organizations were happy to provide the funds or resources required for their employee's technical development. Yet when it came to personal development and transferable skills, something they described as key to the organization, employees were left to figure it out for themselves. One of the interviewees mentioned that regular evaluation sessions were common in their research institute and that employees could have the choice to move to a different position should they wish.

The confidence lacking in doctoral graduates particularly meant that many would struggle to communicate their concerns and thus miss out on flexibility and valuable opportunities to work in positions better suited to their interests. This further exemplifies why doctoral education must develop transferable skills and promote the strengths of a doctoral degree in a multitude of roles and sectors. In doing so, this will also promote adaptability to doctoral students with opportunities to work in teams and/or professional environments where such skills can be developed and highlight doctoral graduates' potential to otherwise hesitant employers.

7. CONCLUSION/DISCUSSION

Society is undergoing major changes in how we work, think, and operate, through a drive towards sustainability and an increased dependency on emerging technologies. Policymakers such as the European Commission highlight this changing world and call for universities and their students to play a role in both innovation and societal development. Doctorate holders are among those who are most knowledgeable, at least on paper. However, criticisms of their overspecialization and lack of transferable skills have meant that employers often shy away from hiring them. As competition for academic jobs increases, doctorate holders must broaden their options and skillset to embrace a variety of career options.

Despite their relevancy to the discussion, employers' voices have been less prominent in the academic literature. Through our interviews, we confirmed the importance of transferable skills, but also found that stereotypes of overspecialized loners led to employers dismissing the potential of doctorate holders in favour of those with a record of adaptability and social skills. The line between what constitutes a skill and personality traits is blurred, leading us to ask whether attributes such as confidence, positive attitude, and resilience can be trained.

We suggest that the challenges presented in working in interdisciplinary teams or intersectoral projects with those outside of academia may provide opportunities to gain experience at adapting to new environments, and develop the desired transferable skills such as communication, teamwork, time management, organization and project management. We invite other researchers to investigate the topic further, in order to strengthen the relevancy of doctoral education for its future graduates and society.

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KEY TERMS & DEFINITIONS

Interdisciplinarity: different disciplines working together with the intention of transferring knowledge between each other.

Intersectorality: different sectors working together (e.g. academia, industry, government) in pursuit of a common goal.

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